

**Notice of Allowability**

Application No.

10/644,546

Examiner

Jean B. Corrielus

Applicant(s)

LOVE ET AL.

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 5/7/07.
2. ☒ The allowed claim(s) is/are 1-22, and 24, renumbered as 1-23, respectively.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All   b) ☐ Some\*   c) ☐ None   of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

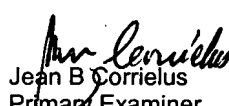
Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

  
Jean B. Corrielus  
Primary Examiner  
Art Unit: 2611

5-24-07

**DETAILED ACTION**  
**EXAMINER'S AMENDMENT**

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Steven Shaw on 5/21/07.

IN THE CLAIMS:

The application has been amended as follows:

Claims 14 and 19 have been amended as follow:

--14. (Currently Amended) The method according to claim 1, wherein the signal vector  $\hat{\underline{s}}_k$  is represented by the relationship  $\hat{\underline{s}}_k = \arg \min_{v \in V} m(y_1, \dots, y_k, v)$ , and wherein  $m$  is a metric.

19. (Currently Amended) A reduced search space decoder comprising:

a sub-optimal decoder configured to receive a signal vector  $y_1 \dots y_k$  and generate soft output bits therefrom;

a decision unit coupled to said sub-optimal decoder and configured to generate a set  $E$  of error bit error patterns;

a reduced search space table creation unit coupled to said sub-optimal decoder and said decision unit, said reduced search space table creation unit configured to generate a reduced search space  $V$  in response to the soft output bits and a set of  $L$  indices,  $L > 0$ ; and

a minimum distance decoder configured to generate a multidimensional signal  $\hat{S}_k$  in response to the reduced search space  $V$  and the signal vector  $y_1 \dots y_k$ --

### Reasons for Allowance


2. The following is an examiner's statement of reasons for allowance: a method and apparatus are disclosed. The closest prior art, Zhang US Patent No. 6,928,120, discloses similar method and apparatus. However, Zhang does not teach or fairly suggest in combination with the other claim limitations the limitations of "generating a reduced search space  $V$  via a reduced search space table creation unit in response to the soft output bits and an estimated channel  $H$ ; and generating a signal vector  $\hat{S}_k$  via a maximum likelihood decoding unit in response to the reduced search space  $V$  and the signal vectors  $y_1 \dots y_k$ " as recited in claim 1 and the limitations of "a reduced search space table creation unit coupled to said sub-optimal decoder and said decision unit, said reduced search space table creation unit configured to generate a reduced search space  $V$  in response to the soft output bits and a set of  $L$  indices,  $L > 0$ ; and a minimum distance decoder configured to generate a multidimensional signal  $\hat{S}_k$  in response to the reduced search space  $V$  and the signal vector  $y_1 \dots y_k$ ", as recited in claim 19.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean B. Corrielus whose telephone number is 571-272-3020.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Jean B Corrielus  
Primary Examiner  
Art Unit 2611

J-24-07